Claims:

1. A method for transducing a neural cell selected from the group consisting of a cerebellar neuron and a neural progenitor cell, said method comprising:

(a) providing a lentiviral vector particle, wherein said vector particle is produced from a lentiviral vector comprising a 5' lentiviral LTR, a tRNA binding site, a packaging signal, a promoter operably linked to a polynucleotide encoding a protein of interest, an origin of second strand DNA synthesis and a 3' lentiviral LTR; and

(b) administering said lentiviral vector particle to the neural cell under conditions whereby the protein encoded by the polynucleotide is expressed to produce a transduced neural cell.

2. The method of claim 1, wherein said lentiviral vector comprises 5' and/or 3' LTRs from a virus selected from the group consisting of HIV, HIV-1, HIV-2, FIV and SIV.

3. The method of claim 2, wherein said lentiviral vector comprises 5' and/or 3' LTRs from FIV.

4. The method of claim 1, wherein said neural cell is a cerebellar neuron.

5. The method of claim 4, wherein said cerebellar neuron is a Purkinje cell.

6. The method of claim 4, wherein said cerebellar neuron is transduced *in vivo* in a vertebrate subject in need of treatment of a disease that causes cerebellar degeneration.

7. The method of claim 4, wherein said cerebellar neuron is transduced *ex vivo* and the transduced neuron is introduced into a vertebrate subject in need of treatment of a disease that causes cerebellar degeneration.

8. The method of claim 1, wherein said neural cell is a neural progenitor cell.

9. The method of claim 8, wherein said neural progenitor cell is transduced *in vivo* in a vertebrate subject in need of treatment of a central nervous system disorder.

10. The method of claim 8, wherein said neural progenitor cell is transduced *ex vivo* and the transduced cell is introduced into a vertebrate subject in need of treatment of a central nervous system disorder.

11. A method for transducing cerebellar neurons comprising:

(a) providing an FIV vector particle, wherein said vector particle is produced from an FIV vector comprising a 5' FIV LTR, a tRNA binding site, a packaging signal, a polynucleotide encoding a protein of interest operably linked to an FIV LTR promoter or a promoter element, an origin of second strand DNA synthesis and a 3' FIV LTR; and

(b) administering said FIV vector particle to a cerebellar neuron under conditions whereby the protein encoded by the polynucleotide is expressed to produce a transduced cerebellar neuron.

12. The method of claim 11, wherein the promoter is a CMV, RSV or SV40 promoter.

13. The method of claim 11, wherein said cerebellar neuron is transduced *in vivo* in a vertebrate subject in need of treatment of a disease that causes cerebellar degeneration.

14. The method of claim 11, wherein said cerebellar neuron is transduced *ex vivo* and the transduced cerebellar neuron is introduced into a vertebrate subject in need of treatment of a disease that causes cerebellar degeneration.

15. A method for transducing neural progenitor cells comprising:

(a) providing an FIV vector particle, wherein said vector particle is produced from an FIV vector comprising a 5' FIV LTR, a tRNA binding site, a packaging signal, a polynucleotide encoding a protein of interest operably linked to an FIV LTR promoter or a promoter element, an origin of second strand DNA synthesis and a 3' FIV LTR; and

(b) administering said FIV vector particle to a neural progenitor cell under conditions whereby the protein encoded by the polynucleotide is expressed to produce a transduced cell.

16. The method of claim 15, wherein the promoter is a CMV, RSV or SV40 promoter.

17. The method of claim 15, wherein said neural progenitor cell is transduced *in vivo* in a vertebrate subject in need of treatment of a central nervous system disorder.

18. The method of claim 15, wherein said neural progenitor cell is transduced *ex vivo* and the transduced cell is introduced into a vertebrate subject in need of treatment of a central nervous system disorder.

19. A method of treating or preventing cerebellar neuronal degeneration in a vertebrate subject, comprising administering to the subject a lentiviral vector particle, wherein said vector particle is produced from a lentiviral vector comprising a 5' lentiviral LTR, a tRNA binding site, a packaging signal, a promoter operably linked to a polynucleotide encoding a protein of interest, an origin of second strand DNA synthesis and a 3' lentiviral LTR.

20. A method of treating or preventing cerebellar neuronal degeneration in a vertebrate subject, comprising administering to Purkinje cells of the subject an FIV vector particle, wherein said vector particle is produced from an FIV vector comprising a 5' FIV LTR, a tRNA binding site, a packaging signal, a polynucleotide encoding a protein of

interest operably linked to an FIV LTR promoter or a promoter element, an origin of second strand DNA synthesis and a 3' FIV LTR.

21. A method of treating or preventing a central nervous system disorder in a vertebrate subject, comprising administering to the subject a lentiviral vector particle, wherein said vector particle is produced from a lentiviral vector comprising a 5' lentiviral LTR, a tRNA binding site, a packaging signal, a promoter operably linked to a polynucleotide encoding a protein of interest, an origin of second strand DNA synthesis and a 3' lentiviral LTR.

22. A method of treating or preventing a central nervous system disorder in a vertebrate subject, comprising administering transduced neural progenitor cells intraventricularly to the subject, wherein said neural progenitor cells have been transduced with an FIV vector particle, wherein said vector particle is produced from an FIV vector comprising a 5' FIV LTR, a tRNA binding site, a packaging signal, a polynucleotide encoding a protein of interest operably linked to an FIV LTR promoter or a promoter element, an origin of second strand DNA synthesis and a 3' FIV LTR.